

Extracorporeal Shockwave Therapy for Lateral Epicondylitis of the Humerus

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It is hard to find in the literature high evidence for any treatment of the lateral epicondylitis of the elbow. There are only a few papers with high scientific level concerning conservative treatment and surgical procedures respectively.

Regarding the literature about extracorporeal shock wave therapy at the lateral epicondylitis we find some papers to discuss:

ESWT without therapy success: Haake (2002)(I) , Speed (2002)(II) .

ESWT with therapy success: Rompe (1996)(III) , Pettrone (2002)(IV) , Rompe (2004)(V) , Pettrone (2005)(VI) .

Some ESWT-studies with lower level of evidence: Wang (2002)(VII) , Ko (2001)(VIII) , Decker (2002)(IX) , Maier (2000)(X) . These studies are not randomized, so they are not accepted to use them for the development of guidelines (concerning the AGREE-instrument for guideline-development).

Very important because of the huge impact and worldwide attention about all Cochrane publications is the Cochrane analysis of Buchbinder (2002)(XI) . In that publication the study data of the publications of Rompe (1996) und Haake (2002) have been consolidated together and the results showed no significant benefit of ESWT. Therefore Buchbinder refused the treatment with ESWT.

Problems at the assessment of ESWT studies in general:

- Unequal parameters used (impulse frequency, energy flux density, maximum energy and pressure etc.).
- No agreement about the energy levels of high energy ESWT and low energy ESWT.
- Different shock wave devices (with different parameters) in one study [Haake-Studie (2002)], so the randomization has been at least weak.
- Only two papers have the same protocols and comparable parameters [Rompe (2004) und Pettrone (2005)].
- The clinical results of the published studies about lateral epicondylitis are mostly not comparable due to the biometrical and technical differences though the studies are of high quality levels.
- There is high probability that local anaesthesia has a decreasing effect on ESWT [Labek (2005)(XII) , Rompe (2005)(XIII) , Klonschinski (2005)(XIV)].

Conclusion:

- The clinical results of the ESWT studies are despite the high biometrical quality levels almost not comparable.
- Local anaesthesia is probably of bad influence on (low energy) ESWT.
- A strict standardization would be helpful, for the clinical use and for the studies. A standard should be developed for operating procedures, which should be used by all users of ESWT (by the national and international societies).
- ESWT has almost no complications and risks. Despite the controversial literature ESWT should be offered for lateral epicondylitis before those particular patients undergo surgery. No other therapy has high grade of evidence due to the ebm criteria. We will offer ESWT to our patients also in the future.

- (I) Haake M, König I.R, Decker T, Riedel C, Buch M, Müller H.H: Extracorporeal shock wave therapy in the treatment of lateral epicondylitis : a randomized multicenter trial.; J Bone Joint Surg Am. 2002 Nov.; 84-A(11): 1982-1991
- (II) Speed CA, Nichols D, Richards C, Humphreys H, Wies JT, Burnet S, Hazleman BL: Extracorporeal shock wave therapy for lateral epicondylitis--a double blind randomized controlled trial, J Orthop Res 2002; 20: 895-898
- (III) Rompe JD, Decking J, Schoellner C, Theis C: Repetitive low-energy shock wave treatment for chronic lateral epicondylitis in tennis players. Am J Sports Med 2004, Vol. 32, 734-743

- (IV) Pettrone F: Randomized clinical Study to evaluate the safety and efficiency of the Siemens Sonocur ESWT System in treating patients with lateral epicondylitis (chronic tennis elbow); <http://www.fda.gov/cdrh/pdf/P010039b.pdf>
- (V) Rompe JD, Decking J, Schoellner C, Theis C: Repetitive low-energy shock wave treatment for chronic lateral epicondylitis in tennis players. *Am J Sports Med* 2004, Vol. 32, 734-743
- (VI) Pettrone F, McCall BR: Extracorporeal Shock Wave Therapy without Local Anesthesia for Chronic Lateral Epicondylitis. *JBJS (Am.)*. 2005;87:1297-1304.
- (VII) Wang CJ, Chen HS: Shock wave therapy for patients with lateral Epicondylitis of the Elbow, *Am J Sports Med* 2002 May-Jun; 30(3): 422-425
- (VIII) Ko JY, Chen HS, Chen LM: Treatment of lateral epicondylitis of the elbow with shock waves, *CORR* 2001 Jun; (387): 60-67
- (IX) Decker T, Kuhne B, Gobel F: Extrakorporale Stoßwellentherapie bei Epicondylitis humeri radialis. *Orthopäde* 7-2002, 633-636
- (X) Maier M, Dürr H.R, Köhler S, Staupendahl D, Pfahler M, Refior H.J: Analgetische Wirkung niederenergetischer extrakorporaler Stoßwellen bei Tendinosis calcarea, Epicondylitis humeri radialis und Plantarfasziitis; *Z Orthop.* 2000 Jan-Feb; 138 (1): 34-38
- (XI) Buchbinder R, Green S, White M, Barnsley L, Smidt N, Assendelft WJ: Shock wave therapy for lateral elbow pain; *Cochrane Database Syst Rev.* 2002; (1): CD003524
- (XII) Labek G, Auersperg V, Ziernhöld M, Poulios N, Böhler N: Einfluss von Lokalanästhesie und Energieflussdichte bei niederenergetischer Extrakorporaler Stoßwellentherapie der chronischen Plantaren Fasziitis. *Z Orthop* 2005; 143: 240-246
- (XIII) Rompe JD, Meurer A, Nafe B, Hofmann A, Gerdesmeyer L: Repetitive low-energy shock wave application without local anesthesia is more efficient than repetitive low-energy shock wave application with local anesthesia in the treatment of chronic plantar fasciitis. *J Orthop Res* Vol 23, Issue 4 , July 2005, Pages 931-941
- (XIV) Klonschinski T, Ament S, Schleret T, Birklein F, Rompe JD: Reduzierte Effektivität niedrigenergetischer Stoßwellen bei simultaner Lokalanästhesie – Aufklärung des Wirkmechanismus. Vortrag Nr. 324, 53. Jahrestagung der Vereinigung Süddeutscher Orthopäden e.V., 28.4.-1.5.2005 in Baden-Baden, Deutschland; *Orthopädische Praxis Sonderausgabe „Kurzreferate der Vorträge“* Seite 184 (www.opfermann.de)